

AMENDMENTS TO THE CLAIMS

Claims 1-33 (canceled).

34. A particle, having at least one changed morphological, chemical or physical feature, wherein said changed feature can facilitate the attachment of at least one agent to the outer surface of the particle, thus permitting the particle to act as a carrier for said at least one agent;

wherein one changed feature is an increased hollow volume.

35. A particle according to claim 34 wherein the one or more further changed features are selected from the group consisting of hairs, pores, surface dimpling, spongy-like formation, modified particle surface roughness, particle shape, particle size, density, modified specific surface area, reducing cohesiveness, improved powder flow, improvement in aerodynamic properties of the particle, transfer and attachment of at least one agent to the particle, the result of transfer of at least one agent, and combinations thereof.

36. A particle according to claim 34 wherein the particle is spherical in shape.

37. A particle according to claim 34 wherein the particle is between 0.05 μm and 4000 μm in diameter.

38. A particle according to claim 34 wherein the agent is selected from the group consisting of therapeutic agents, prophylactic agents, diagnostic agents, excipients, diluents, flavorants, fragrances, dyes, nutrients, and sweeteners.

39. A particle according to claim 34 wherein the agent is a therapeutic agent selected from the group consisting of corticosteroids, anti-inflammatories, antitussives, bronchodilators, diuretics, anticholinergics, hormones, analgesics, vaginal preparations, antiallergics, anti-infectives, antihistamines, anti-neoplastic agents, anti-tuberculosis agents, proteins, polymeric drugs, lipids, organic substances, inorganic substances, nutrients, pro-drugs, antigens peptides, and derivatives thereof.

40. A particle according to claim 34 wherein the particle is administered by a route selected from the group consisting of pulmonary, oral, parental, nasal, rectal, tonsillar, buccal, intra-ocular, topical/transdermal, and vaginal administration.

41. A particle according to claim 34 wherein the agent is selected from the group consisting of beclomethasone, fluticasone, lactose, polyvinyl pyrrolidone, and polyvinyl alcohol.

42. A particle according to claim 34 wherein the particle itself acts as an agent.

43. A method of treating particles to engineer/architecture the particles with particular chemical, morphological and physical features or combinations thereof, wherein one such feature is an increased hollow volume, said method comprising the steps of
optionally processing, at least one agent to form a particle;
treating the particle by making available a fluid, alone or in combination with at least one additive(s) or further agent(s), to the particle to promote change in one or more of the morphological, chemical or physical features of the particle;
repeating step (b) as many times as necessary;
harvesting engineered particles; and
repeating steps (a) to (d) as many times as necessary.

44. The method of claim 43 wherein a further engineered/architected feature is the formation of hairs on the surface of the treated particle.

45. A method according to claim 43 wherein the promoted change of step (b) results in at least one further change to the particle, and wherein the further change is selected from the group consisting of forming and or promoting and or controlling the growth of hairs; modifying the properties of the existing hairs; promoting the formation of pores; modifying the properties of existing pores; modifying the density, modifying and controlling the particle size, controlling particle size growth, increasing or decreasing the surface area or specific surface area of the particle; reducing the cohesiveness of the particles; increasing the flow of

the powder; forming and/or modifying surface dimpling; formation and/or modification of sponge-like formations; alteration of particle surface roughness, improvement in the aerodynamic properties of the particle, ability of the particles to form a stable uniform mix, and ability of the particles to improve blend uniformity and content uniformity.

46. A method according to claim 43 wherein at least one further agent(s), further fluid(s), further additive(s) or combination thereof, is added to any of stages a) to e).

47. A method according to claim 43 wherein the agent is selected from the group consisting of corticosteroids, anti-inflammatories, antitussives, bronchodilators, diuretics, anticholinergics, hormones, analgesics, vaginal preparations, antiallergics, anti-infectives, antihistamines, anti-neoplastic agents, anti-tuberculosis agents, proteins, polymeric drugs, lipids, organic substances, inorganic substances, nutrients, pro-drugs, antigens peptides and derivatives, and combinations thereof.

48. A method according to claim 43 wherein the agent(s) of the particle is either a combination of polyvinyl alcohol and lactose, a combination of polyvinylpyrrolidone and lactose or lactose.

49. A method according to claim 43 wherein the additive is selected from the group consisting of heat, moisture, radiation, pressure, shear forces, magnetic forces, vibration, stirring, vortexing, vacuum, mixing, tumbling, centrifuging, masticating, ultra-sound waves or extruding, electrical, deaggregation agents, and combinations thereof.

50. A method according to claim 43 wherein at least one selected additive is stirring.

51. A method according to claim 43 wherein at least one selected additive is the maintenance of the heat range -200 to 200°C.

52. A method according to claim 43 wherein the engineering step lasts for between 1 microsecond and several hours.

53. A method according to claim 43 wherein the agent of the particle or agent added to the particle during the engineering process is a polymer.
54. A method according to claim 53 wherein the polymer is selected from the group consisting of polyvinyl alcohol, polyvinylpyrrolidone and polyethylene glycols.
55. A method according to claim 43 wherein the fluid contains at least one medium, and/or at least one agent, and/or at least one additive and combinations thereof, that promotes changes in any of the morphological, chemical or physical features of the particle.
56. A method according to claim 43 wherein the fluid is in the bulk liquid state, dispersed liquid state, vapor state or combinations thereof and is either aqueous, organic, liquefied gases or a combination thereof.
57. A method according to claim 56 wherein the liquid state is selected from the group consisting of droplets, mist, fog, and spray.
58. A method according to claim 43 wherein the fluid is selected from the group consisting of water, hydrocarbon liquids, halogenated hydrocarbons, mineral spirit, mineral oils, mineral acids, oxygenated solvents, alcohols, nitrogen containing hydrocarbons, sulfur containing hydrocarbons, hetero-atom containing hydrocarbons, anesthetics, liquefied gases such as liquid nitrogen, the vapor from liquid nitrogen or combinations thereof, and refrigerants.
59. A method according to claim 43 wherein the fluid is selected from the group consisting of water, acetone, ethanol, and combinations thereof.
60. A method according to claim 43 wherein engineering the particle with fluid comprises introducing the fluid, which may be static or in motion, to the particle either in bulk, as droplets, as a foam, as a mist, as fog or as a spray.

61. A method according to claim 43 wherein engineering the particle with fluid comprises introducing the particle, which may be in static or in motion, to the fluid either in bulk, as dispersed particles, as droplets, as a foam, as a mist, as fog or as a spray.
62. A method according to claim 43 wherein the further agent added is polyvinylpyrrolidone, lactose or therapeutic agents such as beclomethasone dipropionate or fluticasone propionate.
63. A low density drug carrier particle having hairs on the surface thereof, wherein the particle acts as a carrier for the delivery of either anti-inflammatory drugs, bronchodilator drugs or a combinations thereof into the lungs of a patient via dry powder inhalation.
64. A carrier particle according to claim 63 wherein the drugs being delivered are selected from the group consisting of beclomethasone dipropionate, fluticasone propionate, salbutamol sulfate, and a combination thereof.